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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,994	08/21/2003	Heinz Willebrand	81598 (7293)	1124

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EXAMINER	
PHAN, HANH	

ART UNIT	PAPER NUMBER
2613	

DATE MAILED: 07/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/646,994	WILLEBRAND ET AL.	
	Examiner	Art Unit	
	Hanh Phan	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 April 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *04/24/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is responsive to the Amendment filed on 04/24/2006.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the feature "**the laser portion and the radio frequency portion are configured to transmit in multiple channels**" specified in the claims 6, 13, 16 and 23 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 6, 7, 13, 14, 16, 23 and 26-28 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

-In claims 26 and 28, U.S. Patent No. 6,239,888 incorporated by reference lacks support for the "**SONET ring**".

-Claims 6, 13, 16 and 23 require "the laser portion and the radio frequency portion are configured to transmit in multiple channels". However, Figures 2, 3, 10 and 11 of U.S. Patent No. 6,239,888 which was incorporated by reference into the instant application only illustrate the laser portion are configured to transmit in multiple channels. The specification fails to disclose that the radio frequency portion are configured to transmit in multiple channels. Therefore, the specification as originally filed fails to provide support for claims 6, 13, 16 and 23.

Double Patenting

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 1, 5, 6, 18 and 23 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-38 of U.S. Patent No. 6,763,195 (Willebrand et al). Although the conflicting claims are not identical, they are not patentably distinct from each other because the limitations recited in claims 1, 5, 6, 18 and 23 of the instant application are encompassed by claims 1-38 of U.S. Patent No. 6,763,195 (Willebrand et al).

Regarding claims 1 and 18, Willebrand et al (U.S. Patent No. 6,763,195) discloses a node incorporating hybrid radio frequency and optical wireless communication links, the node comprising:

at least one laser portion for transmitting data;

at least one radio frequency portion for transmitting data;

a data receiver for receiving data from a data source; and

a controller configured to receive data from a data source and connected with the laser portion and the radio frequency portion to allocate portions of the data to be transmitted through the laser portion and the radio frequency portion (see claims 1 and 3-8 of U.S. Patent No. 6,763,195).

Regarding claim 5, Willebrand et al (U.S. Patent No. 6,763,195) discloses the laser portion is configured to both transmit and receive and wherein the radio frequency portion is configured to both transmit and receive (see claims 1and 3-8 of U.S. Patent No. 6,763,195).

Regarding claims 6 and 23, Willebrand et al (U.S. Patent No. 6,763,195) discloses the laser portion and the radio frequency portion are configured to transmit in multiple channels (see claims 1 and 3-8 of U.S. Patent No. 6,763,195).

7. Claims 1, 5, 6, 18 and 23 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-45 of copending Application No. 10/840,172 (Willebrand et al). Although the conflicting claims are not identical, they are not patentably distinct from each other because the limitations recited in claims 1, 5, 6, 18 and 23 of the instant application are encompassed by claims 1-45 of copending Application No. 10/840,172 (Willebrand et al).

Regarding claims 1 and 18, Willebrand et al (copending Application No. 10/840,172) discloses a node incorporating hybrid radio frequency and optical wireless communication links, the node comprising:

at least one laser portion for transmitting data;

at least one radio frequency portion for transmitting data;

a data receiver for receiving data from a data source; and

a controller configured to receive data from a data source and connected with the laser portion and the radio frequency portion to allocate portions of the data to be transmitted through the laser portion and the radio frequency portion (see claims 1-7 and 15-24 of copending Application No. 10/840,172).

Regarding claim 5, Willebrand et al discloses the laser portion is configured to both transmit and receive and wherein the radio frequency portion is configured to both transmit and receive (see claims 1-7 and 15-24 of copending Application No. 10/840,172).

Regarding claims 6 and 23, Willebrand et al discloses the laser portion and the radio frequency portion are configured to transmit in multiple channels (see claims 1-7 and 15-24 of copending Application No. 10/840,172).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the

applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1-5, 8, 9, 11, 15, 18-21 and 24-26 are rejected under 35 U.S.C. 102(e) as being anticipated by Acampora (US Patent No. 6,049,593).

Regarding claims 1 and 18, referring to Figure 3a, Acampora discloses a node incorporating hybrid radio frequency and optical wireless communication links, the node comprising:

at least one laser portion for transmitting data (i.e., optical transmitter 112, Fig. 3a, col. 6, lines 31-54, col. 15, lines 37-47, col. 23, lines 44-52 and col. 25, lines 10-20);

at least one radio frequency portion for transmitting data (i.e., RF transmitter 111, Fig. 3a);

a data receiver (i.e., receivers shown in Fig. 3a) for receiving data from a data source (i.e., data generated by a terminal (i.e., col. 5, lines 25-45), also receivers receive information or data, therefore, there must be a data source for generating data for transmission over optical and radio transceivers); and

a controller (i.e., ATM switch 117 and control processor 114, Fig. 3a) configured to receive data from a data source and connected with the laser portion and the radio frequency portion to allocate portions of the data to be transmitted through the laser portion and the radio frequency portion (i.e., col. 6, lines 31-54, col. 15, lines 37-47, col. 23, lines 44-52 and col. 25, lines 10-20 and col. 27, lines 37-56).

Regarding claims 2, 8 and 19, Acampora further teaches the controller (i.e., ATM switch 117 and control processor 114, Fig. 3a) is configured as a binary switch such

that the data is transmitted exclusively through either one of the laser portion and the radio frequency portion (i.e., col. 6, lines 31-53 and col. 27, lines 37-56).

Regarding claims 3, 4, 9, 20 and 21, Acampora further teaches the controller is configured to receive environmental information and the portions of the data to be transmitted through the laser portion and the radio frequency portion are adjusted by the controller based on the environment information (i.e., col. 25, line 10 to col. 27, line 56 and col. 5, lines 10-22).

Regarding claim 5, Acampora further teaches the laser portion is configured to both transmit and receive and wherein the radio frequency portion is configured to both transmit and receive (Fig. 3a).

Regarding claim 11, Acampora further teaches the controller (i.e., control processor 114 and ATM switch, Fig. 3a) includes a plurality of latches and a logic device, wherein the plurality of latches and the logic device operate to provide adjustment levels for the portions of the data to be transmitted through the laser portion and the radio frequency portion (i.e., col. 6, lines 31-53, col. 15, lines 37-47 and col. 27, lines 37-56).

Regarding claims 15 and 24, Acampora further teaches the laser portion and radio frequency portion are configured to transmit and receive in tandem, whereby the node may be configured to provide a hybrid serial link to permit tailored radio frequency or optical network connections (Fig. 3a).

Regarding claims 25 and 26, Acampora further teaches wherein at least a portion of the network is configured with a ring topology or SONET ring (i.e., Figs. 6-10, col. 23, lines 49-50 and col. 24, line 47).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 6, 7, 13, 16, 23, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Acampora (US Patent No. 6,049,593) in view of the Article "A countermeasure to improve outage performance of interference-limited microwave radio links" by Kavehrad , Canadian Electrical & Computer Enginerring Journal, Vol. 16, No. 1, pp. 13-18, 1991 (hereinafter "Kavehrad").

Regarding claims 6, 13, 16 and 23, Acampora differs from the claims 6, 13, 16 and 23 in that he does not specifically teach the laser portion and the radio frequency portion are configured to transmit in multiple channels. Kavehrad, from the same field of endeavor, likewise teaches hybrid radio frequency and optical wireless links (Fig. 1). Kavehrad further teaches that the laser portion and the radio frequency portion are configured to transmit twelve IF channels (page 14, under Proposed hybrid architecture section, see lines 10-26). Based on this teaching, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the laser portion

and the radio frequency portion are configured to transmit in multiple channels as taught by Kavehrad in the system of Acampora. One of ordinary skill in the art would have been motivated to do this since allowing to provide a hybrid radio frequency and optical wireless communication system with high speed and high capacity.

Regarding claim 7, the combination of Acampora and Kavehrad teaches the controller is configured to receive environmental information and the portions of the data to be transmitted through the laser portion and the radio frequency portion are adjusted by the controller based on the environment information (i.e., col. 25, line 10 to col. 27, line 56 and col. 5, lines 10-22 of Acampora).

Regarding claims 27 and 28, the combination of Acampora and Kavehrad teaches wherein at least a portion of the network is configured with a ring topology or SONET ring (i.e., Figs. 6-10 of Acampora, col. 23, lines 49-50 and col. 24, line 47).

12. Claims 10, 12 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Acampora (US Patent No. 6,049,593) in view of Vollert (Pub. No. DE 4433896 C1 cited by applicant).

Regarding claims 10, 12 and 22, Acampora differs from the claims 10, 12 and 22 in that he does not specifically teach the laser portion and the radio frequency portion have transmit and receive strengths and the controller is configured to monitor the transmit and receive strengths, wherein the portions of the data to be transmitted through the laser portion and the radio frequency portion are adjusted by the controller based on their transmit and receive strengths. Vollert teaches bi-directional

transmission and reception of information over radio link FUS or optical link IUS based on verification of the transmission quality of different paths by a controller PST and switching from one link to the other based on the evaluation and measurement results (see Figure 1 and whole English translation). Based on this teaching, it would have been obvious to one having skill in the art at the time the invention was made to incorporate a controller such as the one of Vollert for the controller in the system of Acampora in order to verify the transmission quality of the transmission paths.

13. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Acampora (US Patent No. 6,049,593) in view of Kavehrad (Canadian Electrical & Computer Enginerring Journal, Vol. 16, No. 1, pp. 13-18, 1991) and further Vollert (Pub. No. DE 4433896 C1 cited by applicant).

Regarding claim 14, the combination of Acampora and Kavehrad differs from the claim 14 in that it does not specifically teach the laser portion and the radio frequency portion have transmit and receive strengths and the controller is configured to monitor the transmit and receive strengths, wherein the portions of the data to be transmitted through the laser portion and the radio frequency portion are adjusted by the controller based on their transmit and receive strengths. Vollert teaches bi-directional transmission and reception of information over radio link FUS or optical link IUS based on verification of the transmission quality of different paths by a controller PST and switching from one link to the other based on the evaluation and measurement results (see Figure 1 and whole English translation). Based on this teaching, it would have

been obvious to one having skill in the art at the time the invention was made to incorporate a controller such as the one of Vollert for the controller in the system of the combination of Acampora and Kavehrad in order to verify the transmission quality of the transmission paths.

14. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Acampora (US Patent No. 6,049,593) in view of Driessen et al (US Patent No. 5,936,578).

Regarding claim 17, Acampora differs from the claim 17 in that he does not specifically teach an optical reflector is used to deflect transmissions from the laser portion to work around the fixed objects . Driessen teaches an optical transmission system (Fig. 6), wherein an optical reflector is used to deflect transmissions from the laser portion to work around the fixed objects (col. 6, lines 1-7). Based on this teaching, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the optical reflector is used to deflect transmissions from the laser portion to work around the fixed objects as taught by Driessen in the system of Acampora. One of ordinary skill in the art would have been motivated to do this since allowing to provide a deflection for signal transmission around the fixed objects to further continue signal transmission without interruption.

15. Claims 1-5, 8-12, 15, 18-22 and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vollert (Pub. No. DE 4433896 C1 cited by applicant) in view of Acampora (US Patent No. 6,049,593).

Regarding claims 1 and 18, referring to Figure 1, Vollert discloses a node incorporating hybrid radio frequency and optical wireless communication links, the node comprising:

at least one infrared portion for transmitting data (i.e., one infrared portion for transmitting data IUS, Fig. 1);

at least one radio frequency portion for transmitting data (i.e., radio frequency portion for transmitting data FUS, Fig. 1);

a data receiver (Fig. 1) for receiving data from a data source; and

a controller (Fig. 1) configured to receive data from a data source and connected with the infrared portion and the radio frequency portion to allocate portions of the data to be transmitted through the infrared portion and the radio frequency portion (see whole English translation).

Vollert differs from claims 1 and 18 in that he fails to specify that the infrared signal is generated by a laser ("laser portion"). Acampora, from the same field of endeavor, likewise teaches hybrid radio frequency and optical wireless links (Fig. 3a). Acampora further teaches that the Infrared (IR) or optical signal can be generated by laser diode (i.e., col. 25, lines 10-20 and col. 23, lines 44-52). Based on this teaching, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the optical element for transmitting data is a laser diode as taught

by Acampora in the system of Vollert. One of ordinary skill in the art would have been motivated to do this since laser allows higher transmission bit rate and longer transmission distance.

Regarding claims 2, 8 and 19, the combination of Vollert and Acampora teaches the controller is configured as a binary switch such that the data is transmitted exclusively through either one of the laser portion and the radio frequency portion (i.e., col. 6 of Acampora, lines 31-53 and col. 27, lines 37-56).

Regarding claims 3, 4, 9, 20 and 21, the combination of Vollert and Acampora teaches the controller is configured to receive environmental information and the portions of the data to be transmitted through the laser portion and the radio frequency portion are adjusted by the controller based on the environment information (i.e., col. 25, line 10 to col. 27, line 56 and col. 5, lines 10-22 of Acampora).

Regarding claim 5, the combination of Vollert and Acampora teaches the laser portion is configured to both transmit and receive and wherein the radio frequency portion is configured to both transmit and receive (Fig. 1 of Vollert and Fig. 3a of Acampora).

Regarding claims 10, 12 and 22, the combination of Vollert and Acampora teaches the laser portion and the radio frequency portion have transmit and receive strengths and the controller is configured to monitor the transmit and receive strengths, wherein the portions of the data to be transmitted through the laser portion and the radio frequency portion are adjusted by the controller based on their transmit and receive strengths (As indicated in Fig. 1, Vollert teaches bi-directional transmission and

reception of information over radio link FUS or optical link IUS based on verification of the transmission quality of different paths by a controller PST and switching from one link to the other based on the evaluation and measurement results, see whole English translation).

Regarding claim 11, the combination of Vollert and Acampora teaches the controller (i.e., control processor 114 and ATM switch, Fig. 3a of Acampora) includes a plurality of latches and a logic device, wherein the plurality of latches and the logic device operate to provide adjustment levels for the portions of the data to be transmitted through the laser portion and the radio frequency portion (i.e., col. 6 of Acampora, lines 31-53, col. 15, lines 37-47 and col. 27, lines 37-56).

Regarding claims 15 and 24, the combination of Vollert and Acampora teaches the laser portion and radio frequency portion are configured to transmit and receive in tandem, whereby the node may be configured to provide a hybrid serial link to permit tailored radio frequency or optical network connections (Fig. 3a of Acampora).

Regarding claims 25 and 26, the combination of Vollert and Acampora teaches wherein at least a portion of the network is configured with a ring topology or SONET ring (i.e., Figs. 6-10 of Acampora, col. 23, lines 49-50 and col. 24, line 47).

16. Claims 6, 7, 13, 14, 16, 23, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vollert (Pub. No. DE 4433896 C1 cited by applicant) in view of Acampora (US Patent No. 6,049,593) and further in view of Kavehrad (Canadian Electrical & Computer Enginerring Journal, Vol. 16, No. 1, pp. 13-18, 1991).

Regarding claims 6, 13, 16 and 23, the combination of Vollert and Acampora differs from the claims 6, 13, 16 and 23 in that it does not specifically teach the laser portion and the radio frequency portion are configured to transmit in multiple channels. Kavehrad, from the same field of endeavor, likewise teaches hybrid radio frequency and optical wireless links (Fig. 1). Kavehrad further teaches that the laser portion and the radio frequency portion are configured to transmit twelve IF channels (see page 14, under Proposed hybrid architecture section, lines 10-26). Based on this teaching, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the laser portion and the radio frequency portion are configured to transmit in multiple channels as taught by Kavehrad in the system of the combination of Vollert and Acampora. One of ordinary skill in the art would have been motivated to do this since allowing to provide a hybrid radio frequency and optical wireless communication system can be transmits the data signal with high speed and high capacity.

Regarding claim 7, the combination of Vollert , Acampora and Kavehrad teaches the controller is configured to receive environmental information and the portions of the data to be transmitted through the laser portion and the radio frequency portion are adjusted by the controller based on the environment information (col. 27 of Acampora, lines 37-56).

Regarding claim 14, the combination of Vollert , Acampora and Kavehrad teaches the laser portion and the radio frequency portion have transmit and receive strengths and the controller is configured to monitor the transmit and receive strengths,

wherein the portions of the data to be transmitted through the laser portion and the radio frequency portion are adjusted by the controller based on their transmit and receive strengths (As indicated in Fig. 1, Vollert teaches bi-directional transmission and reception of information over radio link FUS or optical link IUS based on verification of the transmission quality of different paths by a controller PST and switching from one link to the other based on the evaluation and measurement results, see whole English translation).

Regarding claims 27 and 28, the combination of Volllert, Acampora and Kavehrad teaches wherein at least a portion of the network is configured with a ring topology or SONET ring (i.e., Figs. 6-10 of Acampora, col. 23, lines 49-50 and col. 24, line 47).

17. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vollert (Pub. No. DE 4433896 C1 cited by applicant) in view of Acampora (US Patent No. 6,049,593) and further in view of Driessen et al (US Patent No. 5,936,578).

Regarding claim 17, the combination of Vollert and Acampora differs from the claim 17 in that it does not specifically teach an optical reflector is used to deflect transmissions from the laser portion to work around the fixed objects . Driessen teaches an optical transmission system (Fig. 6), wherein an optical reflector is used to deflect transmissions from the laser portion to work around the fixed objects (col. 6, lines 1-7). Based on this teaching, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the optical reflector is used to deflect

transmissions from the laser portion to work around the fixed objects as taught by Driessen in the system of the combination of Vollert and Acampora. One of ordinary skill in the art would have been motivated to do this since allowing to provide a deflection for signal transmission around the fixed objects to further continue signal transmission without interruption.

18. Claims 1-5, 8, 9, 11 and 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato (US Patent No. 4,904,993 cited by applicant) in view of Acampora (US Patent No. 6,049,593).

Regarding claims 1 and 18, referring to Figure 1, Sato discloses a node incorporating hybrid radio frequency and optical wireless communication links, the node comprising:

at least one optical portion for transmitting data (i.e., optical transmitter 14 and 13, Fig. 1);

at least one radio frequency portion for transmitting data (i.e., RF transmitter 12 and 11, Fig. 1);

a data receiver (i.e., data supply 15 and data generator 16, Fig. 1) for receiving data from a data source; and

a controller (i.e., switches 17 and 18, the switches control the routing of data to either through the RF portion (12) or optical portion (14), and they can be considered as "controller", Fig. 1) configured to receive data from a data source and connected with the infrared portion and the radio frequency portion to allocate portions of the data to be

transmitted through the infrared portion and the radio frequency portion (col. 2, lines 25-47 lines 51-67 and col. 3, lines 1-3).

Sato differs from claims 1 and 18 in that he fails to specify that the infrared signal is generated by a laser ("laser portion"). Acampora, from the same field of endeavor, likewise teaches hybrid radio frequency and optical wireless links (Fig. 3a). Acampora further teaches that the Infrared (IR) or optical signal can be generated by laser diode (col. 25, lines 10-20 and col. 23, lines 44-52). Based on this teaching, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the optical element for transmitting data is a laser diode as taught by Acampora in the system of Sato. One of ordinary skill in the art would have been motivated to do this since laser allows higher transmission bit rate and longer transmission distance.

Regarding claims 2, 8 and 19, the combination of Sato and Acampora teaches the controller is configured as a binary switch such that the data is transmitted exclusively through either one of the laser portion and the radio frequency portion (col. 6 of Acampora, lines 31-53 and col. 27, lines 37-56).

Regarding claims 3, 4, 9, 20 and 21, the combination of Sato and Acampora teaches the controller is configured to receive environmental information and the portions of the data to be transmitted through the laser portion and the radio frequency portion are adjusted by the controller based on the environment information (col. 27 of Acampora, lines 37-56).

Regarding claim 5, the combination of Sato and Acampora teaches the laser portion is configured to both transmit and receive and wherein the radio frequency portion is configured to both transmit and receive (Fig. 3a of Acampora).

Regarding claim 11, the combination of Sato and Acampora teaches the controller (i.e., control processor 114 and ATM switch, Fig. 3a of Acampora) includes a plurality of latches and a logic device, wherein the plurality of latches and the logic device operate to provide adjustment levels for the portions of the data to be transmitted through the laser portion and the radio frequency portion (col. 6 of Acampora, lines 31-53, col. 15, lines 37-47 and col. 27, lines 37-56).

19. Claims 1-5, 8, 9, 11 and 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zavrel (US Patent No. 5,585,953) in view of Acampora (US Patent No. 6,049,593).

Regarding claims 1 and 18, referring to Figure 1, Zavrel discloses a node incorporating hybrid radio frequency and optical wireless communication links, the node comprising:

at least one infrared portion for transmitting data (i.e., IR transmitter 24, Fig. 1);

at least one radio frequency portion for transmitting data (i.e., RF transmitter 12, Fig. 1);

a data receiver (i.e., data controller 16, Fig. 2) for receiving data from a data source; and

a controller (i.e., switches 20 and 22, Fig. 1) configured to receive data from a data source and connected with the infrared portion and the radio frequency portion to allocate portions of the data to be transmitted through the infrared portion and the radio frequency portion (col. 1, lines 62-67 and col. 2, lines 1-11).

Zavrel differs from claims 1 and 18 in that he fails to specify that the infrared signal is generated by a laser ("laser portion"). Acampora, from the same field of endeavor, likewise teaches hybrid radio frequency and optical wireless links (Fig. 3a). Acampora further teaches that the Infrared (IR) or optical signal can be generated by laser diode (col. 25, lines 10-20 and col. 23, lines 44-52). Based on this teaching, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the optical element for transmitting data is a laser diode as taught by Acampora in the system of Zavrel. One of ordinary skill in the art would have been motivated to do this since laser allows higher transmission bit rate and longer transmission distance.

Regarding claims 2, 8 and 19, the combination of Zavrel and Acampora teaches the controller is configured as a binary switch such that the data is transmitted exclusively through either one of the laser portion and the radio frequency portion (col. 6 of Acampora, lines 31-53 and col. 27, lines 37-56).

Regarding claims 3, 4, 9, 20 and 21, the combination of Zavrel and Acampora teaches the controller is configured to receive environmental information and the portions of the data to be transmitted through the laser portion and the radio frequency

portion are adjusted by the controller based on the environment information (col. 27 of Acampora, lines 37-56).

Regarding claim 5, the combination of Zavrel and Acampora teaches the laser portion is configured to both transmit and receive and wherein the radio frequency portion is configured to both transmit and receive (Fig. 1 of Zvarel and Fig. 3a of Acampora).

Regarding claim 11, the combination of Zavrel and Acampora teaches the controller (i.e., control processor 114 and ATM switch, Fig. 3a of Acampora) includes a plurality of latches and a logic device, wherein the plurality of latches and the logic device operate to provide adjustment levels for the portions of the data to be transmitted through the laser portion and the radio frequency portion (col. 6 of Acampora, lines 31-53, col. 15, lines 37-47 and col. 27, lines 37-56).

Response to Arguments

20. Applicant's arguments with respect to claims 1-28 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh Phan whose telephone number is (571)272-3035.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached on (571)272-3022. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-4700.

HANH PHAN
PRIMARY EXAMINER